DESALINATION: WHAT YOU NEED TO KNOW

-The Problems

Energy Demand

Water produced at the Carlsbad facility requires **47%** more energy than water delivered from the State Water Project to San Diego (currently the region's water source with the highest energy demand). "Embedded energy" in water is the State's number one energy demand. Adding to that demand stresses our energy supply, creates unwanted pollution -- and as the cost of energy increases, the cost of water with the most embedded energy goes up the fastest.

Open Ocean Intake

The outdated "cooling water" seawater intake technology used at the Carlsbad facility has been estimated to kill 70 billion fish and marine life annually statewide. The screens proposed by Poseidon will only reduce that marine life mortality by 1% -- but sub-surface intakes all but eliminate marine mortality. In California regulations adopted after Carlsbad was erroneously approved, sub-surface intakes are identified as the "best technology available" to minimize intake and mortality of marine life.

Brine Discharge

Desalination generates waste – extra-salty brine containing a high concentration of materials normally found in seawater (magnesium, boron, sulfate, etc.) and often including chemicals used in the desalination process (e.g., aluminum chloride, polyphosphates, and biocides).

This waste stream can have serious detrimental impacts to the environment when not properly discharged, including acute and chronic toxicity. Brine displaces and harms marine life in the water column near the discharge point. And if it isn't rapidly diluted, it will settle on the seafloor and permanently impact marine habitat. The brine disposal technique in Carlsbad has been prohibited in California regulations adopted after Carlsbad was erroneously approved.

Desalination infrastructure located near Marine Protected Areas (MPAs) may result in impacts from both the brine discharged and the intakes such as: a reduction in larval connectivity between protected areas and the occurrence of sinks. Long term and careful analysis is critical for understanding these impacts on the MPA network.

Use responsible technology

The use of subsurface intakes – **rather than open ocean intakes** – would nearly eliminate marine life mortality. And these intakes also result in better water quality sourced from the ocean, which lowers operating costs. Subsurface intakes pull in water from beneath layers of rock or sand, which provide natural filtration services, reducing the energy demand of the desalination process.

Source: Natural Resources Defense Council: Proceed with Caution, California's Drought and Seawater Desalination (2014). Source: http://www.nrdc.org/oceans/files/ca-drought-seawater-desalination-IB.pdf

For questions please contact:
Amanda Winchell, California Coastal Policy Coordinator
awinchell@surfrider.org

DESALINATION: WHAT YOU NEED TO KNOW

-The Options

Use Best Alternatives First

California can achieve a sustainable supply of freshwater through statewide efforts to accelerate efficiency, conservation, rainwater retention and recycled wastewater. These alternatives are a cheaper source of reliable water supply and help alleviate intractable pollution problems, energy waste, urban flooding and wildlife habitat loss. Investing billions of dollars in developing seawater desalination "crowds out" these cheaper multi-benefit alternatives – we not only have scarce water resources, but the money to fix the problem is equally limited. Source: http://pacinst.org/publication/ca-water-supply-solutions/

Conservation

Despite public misperceptions, water conservation saves money in the long-run. During the drought of the 1990s Californians dramatically reduced water waste by replacing indoor appliances and fixtures with more efficient modern options. The conservation achieved then has allowed 2 decades of economic and population growth in southern California cities without increasing cumulative demand – making water more reliable and avoiding the enormous cost of developing new supplies. And our recent outdoor conservation efforts are likely to achieve the same, if not better, cost savings and water reliability for the next several decades. Source: http://www.financingsustainablewater.org/resource-search/conservation-helps-limit-rate-increases-colorado-utility

Rainwater Retention

Simple steps to restore urban areas' natural ability to retain rainwater when it comes will reduce pollution and flood risk, restore our rivers and ocean, while re-charging local groundwater resources. Groundwater is the cheapest source of freshwater in much of California and enhancing this source wherever it's available makes the entire State system more sustainable. Sources: http://www.epa.gov/green-infrastructure http://www.surfrider.org/programs/ocean-friendly-gardens

Recycled Wastewater

California throws away 4.3 million acre-feet of water every year. Purifying wastewater for potable re-use is cheaper than the imported water we are currently wasting, and eliminates the discharge of partially treated sewage into our waterways and ocean. Recycled wastewater facilities use the same technology as seawater desalination, providing the same safe fresh water supplies and employment opportunities at far less cost to consumers.

- Orange County is doing it!
  - Groundwater Replenishment System produces up to 100 million gallons per day
  - Cost $481 million to build
  - Water produced costs $850 per acre-foot

Source: http://www.ocwd.com/gwrs/frequently-asked-questions/

- Different story for desalination…
  - Poseidon's Carlsbad desalination plant will produce 50 million gallons per day
  - Cost $1 billion to build
  - Water produced will cost $2,014 to $2,257 per acre-foot

Sources: http://www.sdcwa.org/seawater-desalination http://www.sdcwa.org/sites/default/files/desal-carlsbad-fs-single.pdf

-City of San Diego will be going Pure in 2021

- Pure Water San Diego will reclaim and purify up to 30 millions gallons of water per day when it goes live, with a long term production goal of 83 million gallons (1/3 of San Diego's future drinking water supply) by 2035

Source: http://www.sandiego.gov/water/purewater/purewatersd/